| CERTIFICATE OF TRANSMISSION BY FACSIMILE (37 CFR 1.8) Applicant(s): Klaus-Leo Wilbuer, et al. | Docket No. SWR-0004 |
|---|---|

| Serial No. | Filing Date | Examiner | Group Art Unit |
|---|---|---|---|
| 09/446,623 | March 21, 2000 | Troy Chambers | 3641 |

Invention: PROCESS FOR PRODUCING A NEUTRON-ABSORBING COATING



I hereby certify that this Transmittal of Appeal Brief (1 pg) : Appeal Brief (15 pgs)
*(Identify type of correspondence)*
is being facsimile transmitted to the United States Patent and Trademark Office (Fax. No. (703) 872-9306

on January 22, 2004
*(Date)*

Lindsay Wells
*(Typed or Printed Name of Person Signing Certificate)*

Lindsay Wells
*(Signature)*

Note: Each paper must have its own certificate of mailing.

| TRANSMITTAL OF APPEAL BRIEF (Small Entity) | Docket No. SWR-0004 |
|---|---|

In Re Application Of: Klaus-Leo Wilbuer, et al.

| Serial No. | Filing Date | Examiner | Group Art Unit |
|---|---|---|---|
| 09/446,623 | March 21, 2000 | Troy Chambers | 3641 |

Invention: PROCESS FOR PRODUCING A NEUTRON-ABSORBING COATING

TO THE COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:

Applicant is a small entity under 37 CFR 1.9 and 1.27.

A verified statement of small entity status under 37 CFR 1.27:

☐ is enclosed.

☒ has already been filed in this application.

The fee for filing this Appeal Brief is: $165.00

☐ A check in the amount of the fee is enclosed.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 06-1130

Karen A. LeCuyer
*Signature*

Dated: January 22, 2004

Karen A. LeCuyer
Registration No. 51,928
Customer No. 23413
Cantor Colburn LLP
Phone: (860)286-2929
Fax: (860)286-0115

I certify that this document and fee is being deposited on January 22, 2004 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Lindsay Wells
*Signature of Person Mailing Correspondence*

Lindsay Wells (VIA FACSIMILE)
*Typed or Printed Name of Person Mailing Correspondence*

cc:

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**



| | | |
|---|---|---|
| APPELLANT: | KLAUS-LEO WILBUER, ET AL. | ) Before the Board of Appeals |
| SERIAL NUMBER: | 09/446,623 | ) |
| FILED: | March 21, 2000 | ) |
| FOR: | PROCESS FOR PRODUCING A NEUTRON-ABSORBING COATING | ) Art Unit 3641 |

---

**APPEAL BRIEF**

---

1. THE REAL PARTY IN INTEREST

The real parties in interest in this Appeal are Metallveredlung GmbH & Co. KG and GNB Gesellschaft für Nuklear-Behälter mbH. Ownership by Metallveredlung GmbH & Co. KG and GNB Gesellschaft für Nuklear-Behälter mbH is established by assignment document recorded for this application on March 21, 2000, at Reel 010705, Frame 0448.

2. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interference proceedings known to Appellants, Appellants' legal representatives, or assignees that will directly affect or be directly affected by or have a bearing on the decision of the Board of Patent Appeals and Interferences in the pending appeal.

3. STATUS OF CLAIMS

Claims 1-10, 12 and 13 are pending. Claim 13 stands rejected under 35 U.S.C. § 102(b) as anticipated by Baburek (EPO Publication EP 55679) (hereinafter "Baburek"). All of the claims stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wang (United States Patent No. 4,238,299) (hereinafter "Wang") in view of Baburek.

4. STATUS OF AMENDMENTS

There have been no amendments filed subsequent to receipt of the Final Office Action. Remarks filed after the Final Office Action on November 24, 2003 were entered.

5. SUMMARY OF INVENTION

The present invention is directed to a method of producing a coating for absorbing neutrons. A dispersion bath comprising nickel and boron and/or a boron compound is provided. (Specification, page 3, lines 11-16) The dispersion bath may include boron carbide or boron in elemental form. (Specification, page 3, lines 14-16) From the dispersion bath, the coating of boron-nickel is produced on at least part of a shielding

element. During the coating process, a relative movement is produced between the surface to be coated and the dispersion bath. (Specification, page 3, lines 7-10) The relative movement is produced "at least for a time" (e.g., at least intermittently). (Specification, page 3, lines 9-10) The relative movement is optionally produced by moving the element to be coated. (Specification, page 4, line 5) The surface to be coated may be arranged face-up in the bath (Specification, page 4, lines 12-13), and the coating may be deposited chemically or electrolytically (Specification, page 4, lines 2-3) to a thickness of 350 micrometers (um) to 500 um. (Specification, page 3, lines 17-18) In one example, steel plates were electrolytically coated in a nickel/boron carbide dispersion bath by turning the plates every half hour and moving them up and down from time to time to produce the relative movement to the dispersion bath. (Specification, page 4, lines 29-30)

A key feature of the invention is the relative movement between the surface to be coated and the dispersion bath during the coating process. The relative movement, at least in part, maintains the particles dispersed in the dispersion bath. This is a distinct advantage over conventional mixing methods involving recirculators and/or pumps which may wear out in a relatively short period of time.

With respect to the coating, the boron is inserted into a nickel matrix such that the boron content is greater than about 20%, or even greater than about 40% (Specification, page 3, lines 13-14). The method is economical and easy to use, provides for increased effectiveness of the absorption, permits greater variability in terms of the basic materials and shape of the coated shielding elements, and further permits production of lighter shielding elements that have the same or greater absorption qualities as elements having thicker coatings. A shielding element produced by the method may be composed of an inorganic basic material with a boron/nickel coating containing more than 20% boron or boron carbide by volume. (Specification, page 4, lines 22-27)

6. ISSUES

There are two issues on appeal: (1) whether Claim 13 is patentable under 35 U.S.C. §102(b) over Baburek; and (2) whether Claims 1-10, 12 and 13 are patentable under 35 U.S.C. §103(a) over Wang in view of Baburek.

7. GROUPING OF CLAIMS

There are two groups of claims. Claims 1-10 and 12 comprise the first group. Claim 13 comprises the second group.

8. ARGUMENT

A. Rejection of Claim 13 under 35 U.S.C. §102(b): Claims 13 is patentable over Baburek.

Claim 13 is directed to a shielding element having a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the coating manufactured by a method comprising providing a basic material forming a shielding element; providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron; contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element and providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the coating process; and separating the shielding element from the dispersion bath; and wherein said base material formed by an inorganic material and said coating has more than 20% by volume of boron and/or compounds of boron thereof embedded in a nickel matrix.

Baburek discloses a box for underwater storage of irradiated nuclear fuel assemblies. The box includes a coating (I) consisting of boron carbide particles embedded in a nickel binder and a continuous layer (II) of nickel which covers the coating (I). Baburek teaches forming the coating (I) with a plasma torch using boron carbide powder grains coated with nickel. To obtain the boron carbide layer, it is

necessary to have a plasma atmosphere surrounding the area where the nickel-bound boron carbide particles will be fixed on the continuous layer (II). Baburek thus discloses a two-layer structure in which one layer is a layer of boron carbide particles in a nickel binder and a second layer is a nickel layer. There is no suggestion in Baburek that one layer may be used in isolation.

In making the rejection, the Examiner alleges that the product disclosed in Baburek is identical to the presently claimed product because Baburek discloses a shielding element having a boron carbide content of 50 wt.% in the nickel matrix. Appellants respectfully disagree.

To anticipate a claim under 35 U.S.C. § 102, a single source must contain all of the elements of the claim. *Lewmar Marine Inc. v. Barient, Inc.*, 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1007 (1988). Moreover, the single source must disclose all of the claimed elements "arranged as in the claim." *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984).

Present Claim 13 claims a coating wherein boron and/or compounds of boron are embedded in a nickel matrix. Because the coating is formed from a dispersion bath containing nickel and boron and/or a boron compound, a cross-cut through the coating would reveal a substantially continuous composition. The coating of Baburek, in contrast, is one in which a plasma torch is used to fix nickel-bound boron carbide particles on a continuous nickel layer. The coating of Baburek is essentially a sandwich-type structure in which a boron carbide-nickel layer is coated with a nickel layer. A cross-cut through the coating of Baburek would reveal a sandwich-type structure with layers having different compositions. Because the cross-sections of the two coatings are entirely different, the presently claimed coating is not identical to the coating described in Baburek.

For at least the foregoing reasons, all of the limitations of Claim 13 are not taught in Baburek. Thus, the Examiner's rejection of Claim 13 under 35 U.S.C. §102(b) as

being obvious over Baburek is improper. Appellants respectfully request the reversal of the 35 U.S.C. §102(b) rejection of Claim 13 on these grounds.

B. Rejection of Claims 1-10, 12 and 13 under 35 U.S.C. §103(a): Claims 1-10, 12 and 13 are patentable over Wang in view of Baburek.

Claims 1-10, and 12 are directed to a method for producing a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the method comprising providing a basic material forming a shielding element; providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron; contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element; providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process; and separating the shielding element from the dispersion bath. As described above, Claim 13 is a product by process claim. Claims 1 and 13 include the following limitation: "providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron".

Baburek was described in detail above. Baburek does not disclose a dispersion bath and thus does not disclose relative movement between a surface to be coated and a dispersion bath.

Wang discloses a method for producing shielding elements containing boron carbide particles embedded in a copper matrix. Wang teaches that a tube of stainless steel is removably situated on the bottom of an electrolytic cell so as to be disposed in electrical contact with a cathode contact connected to a current source. (Column 3, lines 6-12) The cell is filled with "conventional copper electrolyte solution 24 containing copper ions" such that "[t]he entire cell 10 is filled to a level about anode 12....". (Column 3, lines 16-18) Anode 12 is connected to the current source. "[B]oron carbide particles 26 are introduced through funnel 14 *while agitating the electrolyte solution with the stirrers 16*". (Column 3, lines 20-22, emphasis added) A thin layer of copper is

plated on the exposed upper surface of the tube (before or during the introduction of the boron carbide particles) to improve the bonding between the stainless steel and the layer to be built up on the tube surface. (Column 3, lines 24-27) *"[T]he stirrers 16 are [then] stopped to allow the [boron carbide] particles to settle onto the surface of the tube 18 while electroplating proceeds...,"* thereby trapping the boron carbide particles in the copper plate. (Column 3, lines 29-31, emphasis added) As such, Wang teaches a method of electroplating boron carbide particles onto the tube by stopping agitation to allow the boron carbide particles to settle onto the tube. Thus, there is no dispersion of the boron carbide *during* the contacting process. Because there is no dispersion of particles, there can be no movement relative to a dispersion during the coating process. Further, in this embodiment, there is no movement of the surface to be coated during coating.

In another embodiment, a rotation of the tubes to be coated to expose the next face "after plating" is disclosed. (Column 4, lines 19-22) This process differs from the claimed process because the tube rotation does not occur during contacting with the electrolyte solution. As with the embodiment described above, there is also no dispersion of the boron carbide during the coating process.

In yet another embodiment, square tubes are arranged around the circumference of a rotatable drum filled with an electrolyte containing copper ions. (Column 4, lines 32-45) Boron carbide particles are introduced into the electrolyte and evenly distributed over the surfaces of the tubes by "first slowly rotating the assembly and then increasing the rotational speed gradually until the boron carbide particles settle evenly on the inside surface of the drum". (Column 4, lines 45-52) In another arrangement, the tube is mounted coaxially in the rotatable drum. (Column 5, lines 4-9) The boron carbide particles "circulate and fall evenly onto the outside surfaces of the square tubing continuously". (Column 5, lines 16-20) In both cases, during the coating process, the boron carbide particles are not dispersed in the electrolyte, otherwise they would not settle on the surface to be coated. There is no dispersion of the boron carbide during coating in this embodiment because the particles are added and simply fall onto the surface to be coated. Because there is no dispersion of particles, there can be no movement relative to a dispersion during the coating process.

In particular, the Examiner alleges that Baburek discloses a nickel-boron shielding element, but fails to disclose the claimed relative movement. The Examiner further alleges that "Wang discloses a dispersion bath manufacturing process for nuclear radiation shields including a relative movement provided at least intermittently (col. 4, 12-68, and col. 5, 4-32)". (Paper 23, Page 4) Appellants respectfully disagree.

The present claims include "providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron" and "providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process". Baburek does not teach a dispersion bath or a relative movement as presently claimed. Appellants maintain that Wang also does not teach a dispersion bath as presently claimed and thus does not cure the defects of Baburek.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1996).

Unlike Appellants' claimed invention, Wang and Baburek fail to teach a dispersion bath. Baburek does not teach a dispersion, bath, but instead teaches formation of a coating using a plasma torch. As previously stated, Wang teaches the deposition of boron carbide resulting from the physical "settling out" of the boron carbide particles from the liquid phase of the electrolyte solution once agitation has ceased. In the embodiments of Wang where the tubes are rotated during coating, the boron carbide particles are not dispersed in the solution, but rather "settle[d] evenly on the inside

surface of the drum" and then rotating the drum while electroplating copper (Column 4, lines 45-62), or alternatively the particles "fall evenly onto the outside surfaces of the square tubing continuously". (Column 5, lines 16-19) In none of these cases is a dispersion bath employed during the coating process. Thus, there is at least one element of the present claims that is not taught by either Baburek or Wang.

Moreover, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references to arrive at Appellants' claimed invention. Baburek teaches application of a coating containing *nickel* and boron carbide by plasma torch which is a physical method. Wang teaches an electrochemical method of forming a coating containing *copper* and boron carbide. There is no teaching or suggestion in either Baburek or Wang that an electrochemical method such as that disclosed in Wang would be suitable for deposition of a nickel and boron carbide coating. Copper and nickel are different elements having different properties and a method which is suitable for use with copper is not necessarily suitable for use with nickel. Therefore, Appellants submit that there is no suggestion or motivation to combine Wang and Baburek as the Examiner has done.

There is further no expectation of success for using an electrochemical method as taught in Wang to form a nickel and boron carbide coating. The electroplating method for depositing boron carbide particles onto the surface of a tubing taught in Wang is quite distinct from the plasma torch method for depositing boron carbide onto a casing taught in Baburek. That is, these methods have different parameters and working conditions, and are workable on different types of materials. Consequently, since Baburek teaches a method quite distinct from that taught in Wang, there is no expectation of success in utilizing the materials disclosed in Baburek in an electroplating method as disclosed in Wang. Thus, there is no expectation of success in combining Baburek and Wang.

Further, if one were to properly combine Baburek and Wang, one would obtain a sandwich type structure as in Baburek having a first layer containing nickel and boron

carbide and a second layer containing nickel. This sandwich-type coating is not the coating structure obtained in the presently claimed methods.

Therefore, because neither Wang nor Baburek, either alone or in combination, teaches or suggests all of the claim limitations of Claims 1 and 13 (i.e., providing a dispersion bath), there is no motivation to combine, and no expectation of success, Appellants respectfully submit that a prima facie case of obviousness has not been established for these claims.

Furthermore, because Claims 2-10, and 12 depend from Claim 1, and because claims that depend from a claim that is non-obvious are themselves non-obvious, Appellants assert that Claims 2-10 and 12 are non-obvious.

With respect to Claim 2, the Examiner cites Wang at Column 4, lines 48-59. Claim 2 relates to the method "wherein the relative movement is produced by moving the element to be coated through the dispersion bath". Because Baburek and Wang do not teach a dispersion bath, they do not teach movement of an element to be coated through a dispersion bath and do not render Claim 2 obvious.

With respect to Claim 3, the Examiner cites Wang at Column 4, lines 12-17 and Figures 1, 6 and 7. Claim 3 relates to a method "wherein the surface to be coated is arranged in a direction to the surface of the dispersion bath". Because Baburek and Wang do not teach a dispersion bath, they do not teach arrangement in a direction to a surface of the dispersion bath and do not render Claim 3 obvious.

With respect to Claim 4, the Examiner cites Wang at Column 3, lines 19-22 and Column 4, lines 45-46. Claim 4 relates to a method "wherein a dispersion bath with boron carbide is used". Because Baburek and Wang do not teach a dispersion bath, they do not teach a dispersion bath with boron carbide and do not render Claim 4 obvious.

With respect to Claim 5, the Examiner alleges that it would be obvious to remove the carbon from the boron carbide compound. (Paper 23, Page 5) Claim 5 relates to a method "wherein a dispersion bath with boron in element form is used". Because Baburek and Wang do not teach a dispersion bath, they do not teach a dispersion bath

with a boron in element form and do not render Claim 4 obvious. In addition, removing the carbon from the boron element would lead to a totally different chemistry. For example, boron carbide as a boron-carbon compound is an easy to handle compound which has been produced since about 1899 on a ton-scale. Elemental boron, on the other hand, is an expensive and dangerous to handle compound. It is thus not obvious to substitute elemental boron for boron carbide.

With respect to Claim 6, the Examiner alleges that "Baburek discloses a method for coating a shielding element with a boron-nickel layer using a plasma torch". (Paper 23, Page 5) Claim 6 relates to a method "wherein the coating is formed chemically". Formation with a plasma torch is a physical, not a chemical method. Baburek thus does not render this claim obvious as alleged by the Examiner.

With respect to Claim 7, the Examiner alleges that "Wang discloses electrolytic boron carbide deposition". (Paper 23, Page 5) Appellants disagree. Claim 7 relates to a method "wherein the coating is formed electrolytically". Wang discloses electrolytic deposition of copper through an electrolytically nonconductive boron carbide layer. Thus only the copper of Wang is deposited electrolytically. The current claim is directed to electrolytic deposition of the entire coating, not just one element.

With respect to Claim 8, the Examiner alleges that "the thickness of the coating is controlled by the quantity of coating material used and, therefore, involves only routine skill in the art". (Paper 23, Page 5) Claim 8 is directed to a method "wherein a coating 350 to 500 $\mu$m thick is produced". The thickness of the coating is dependent not only on the materials used but also on the method used to produce the coating. Since Baburek and Wang do not appear to disclose the claimed coating thickness, it is unclear if their disclosed methods would be suitable to produce a coating having the presently claimed thickness.

With respect to Claims 9 and 10, the Examiner states that Baburek discloses a boron carbide content of 50 wt.%. (Paper 23, Page 5) Present Claim 9 is directed to the method "wherein boron or boron carbide with more than 20% by volume is embedded in the nickel matrix". Present Claim 10 is directed to the method "wherein boron or boron

carbide with more than 40% by volume is embedded in the nickel matrix". As stated previously, the methods of Baburek and Wang are different from the presently claimed methods because neither Baburek nor Wang discloses a dispersion solution as presently claimed.

With respect to Claim 12, the Examiner cites Wang Column 2, lines 58-61. Claim 12 is directed to a method "wherein the method is carried out in a glass tub". In the lines cited by the Examiner, Wang discloses a Lucite vessel, not a glass vessel. Wang does not appear to disclose a glass vessel.

Regarding Claim 13, neither Wang nor Baburek discloses the presently claimed process or the product produced by the process. As discussed above, Baburek discloses a sandwich-type coating which is distinct from that which is presently claimed. There is no teaching or suggestion in Baburek of a substantially continuous coating as is produced by the presently claimed method. With regard to Wang, Wang does not disclose a coating containing nickel.

For at least the foregoing reasons, all of the limitations of independent Claims 1 and 13 are not taught or suggested by Wang and Baburek, either individually or in combination. Thus, the Examiner's rejection of Claims 1 and 13 under 35 U. S.C. §103(a) as being obvious over Wang in view of Baburek is improper. Because Claims 2-10 and 12 depend from Claim 1, and because claims that depend from a claim that is non-obvious are themselves necessarily non-obvious, Appellants submit that Claims 2-12 are non-obvious. Therefore, Appellants respectfully assert that the Examiner's rejection of Claims 2-12 is also improper. Appellants respectfully request the reversal of the 35 U.S.C. §103(a) rejection of Claims 1-12 and 13 on these grounds.

C. Conclusion

For the reasons discussed above, Appellants respectfully submit that this application is in condition for allowance and requests reversal of the outstanding rejections and early allowance of this application. If there are any additional charges with respect to this Appeal Brief or otherwise, they may be charged to Deposit Account No. 06-1130 maintained by Cantor Colburn LLP.

Respectfully submitted,

CANTOR COLBURN LLP

By: Karen A. LeCuyer
Karen A. LeCuyer
Registration No. 51,928
Customer No. 23413

Date: January 22, 2004
Address: 55 Griffin Road South, Bloomfield, CT 06002
Telephone: (860) 286-2929

APPENDIX

IN THE CLAIMS

1. A method for producing a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the method comprising:

providing a basic material forming a shielding element;

providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron;

contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element;

providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process; and

separating the shielding element from the dispersion bath.

2. The method of Claim 1, wherein the relative movement is produced by moving the element to be coated through the dispersion bath.

3. The method as set forth in Claim 1, wherein the surface to be coated is arranged in a direction to the surface of the dispersion bath.

4. The method as set forth in Claim 1, wherein a dispersion bath with boron carbide is used.

5. The method as set forth in Claim 1, wherein a dispersion bath with boron in element form is used.

6. The method as set forth in Claim 1, wherein the coating is formed chemically.

7. The method as set forth in Claim 1, wherein the coating is formed electrolytically.

8. The method as set forth in Claim 1, wherein a coating 350 to 500 μm thick is produced.

9. The method as set forth in Claim 1, wherein boron or boron carbide with more than 20% by volume is embedded in the nickel matrix.

10. The method as set forth in Claim 1, wherein boron or boron carbide with more than 40% by volume is embedded in the nickel matrix.

11. (Canceled)

12. The method as set forth in Claim 1, wherein the method is carried out in a glass tub.

13. A shielding element having a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the coating manufactured by a method comprising:

providing a basic material forming a shielding element;

providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron;

contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element and providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the coating process; and

separating the shielding element from the dispersion bath; and

wherein said base material formed by an inorganic material and said coating has more than 20% by volume of boron and/or compounds of boron thereof embedded in a nickel matrix.

14. (Canceled)